



**TXU Energy**  
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**C. Lance Terry**  
Senior Vice President &  
Principal Nuclear Officer

Ref: 10 CFR50.73(a)(2)(iv)(A)

CPSES-200300780  
Log # TXX-03066

May 9, 2003

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

**SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)**  
**DOCKET NO. 50-445**  
**ACTUATION OF REACTOR PROTECTION SYSTEM**  
**LICENSEE EVENT REPORT 445/03-002-00**

Enclosed is Licensee Event Report (LER) 03-002-00 for Comanche Peak Steam Electric Station Unit 1, "Reactor Trip due to Loss of Main Feedwater".

This communication contains no new licensing basis commitments regarding CPSES Units 1 and 2.

JE22

TXX-03066

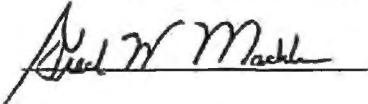
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Sincerely,

TXU Generation Company LP

By: TXU Generation Management Company LLC,  
Its General Partner

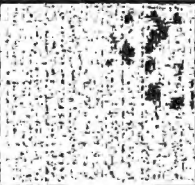
C. L. Terry  
Senior Vice President and Principal Nuclear Officer

By: 

Fred W. Madden  
Nuclear Licensing Manager

GLM/gm  
Enclosures

c - E. W. Merschoff, Region IV  
W. D. Johnson, Region IV  
D. H. Jaffe, NRR  
Resident Inspectors, CPSES

NRC FORM 366 (7-2001)			U.S. NUCLEAR REGULATORY COMMISSION			APPROVED BY OMB NO. 3150-0104 EXPIRES 07/31/2004  Estimated burden per response to comply with this mandatory information collection request: 30 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NE0B-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.				
LICENSEE EVENT REPORT (LER)										
Facility Name (1) <b>COMANCHE PEAK STEAM ELECTRIC STATION UNIT 1</b>						Docket Number (2) <b>05000445</b>		Page (3) <b>1 OF 5</b>		
Title (4) <b>ACTUATION OF REACTOR PROTECTION SYSTEM</b>										
Event Date (5)			LER Number (6)			Report Date (7)			Other Facilities Involved (8)	
Month	Day	Year	Year	Sequential Number	Revision Number	Month	Day	Year	Facility Name	Docket Numbers
03	16	2003	03	002	00	05	09	2003		05000
Operating Mode (9)		This report is submitted pursuant to the requirements of 10 CFR : (Check all that apply) (11)								
1										
Power Level (10)										
100										
		20.2201(b)		20.2203(a)(3)(i)		50.73(a)(2)(i)(C)		50.73(a)(2)(vii)		
		20.2201(d)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(A)		50.73(a)(2)(viii)(A)		
		20.2203(a)(1)		20.2203(a)(4)		50.73(a)(2)(ii)(B)		50.73(a)(2)(viii)(B)		
		20.2203(a)(2)(i)		50.36(c)(2)(i)(A)		50.73(a)(2)(iii)		50.73(a)(2)(ix)(A)		
		20.2203(a)(2)(ii)		50.36(c)(1)(ii)(A)		X 50.73(a)(2)(iv)(A)		50.72(a)(2)(x)		
		20.2203(a)(2)(iii)		50.36(c)(2)		50.73(a)(2)(v)(A)		73.71(a)(4)		
		20.2203(a)(2)(iv)		50.46(a)(3)(ii)		50.73(a)(2)(v)(B)		73.71(a)(5)		
		20.2203(a)(2)(v)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(C)		OTHER Specify in Abstract below or in NRC Form 366A		
20.2203(a)(2)(vi)		50.73(a)(2)(i)(B)		50.73(a)(2)(v)(D)						
Licensee Contact For This LER (12)										
Name <b>Dave Goodwin – SMART Team 2 Manager</b>								Telephone Number (Include Area Code) <b>(254)897-0815</b>		
Complete One Line For Each Component Failure Described in This Report (13)										
Cause	System	Component	Manufacturer	Reportable To EPIX		Cause	System	Component	Manufacturer	Reportable To EPIX
B	SD	MO		Y						
Supplemental Report Expected (14)						EXPECTED SUBMISSION DATE (15)			Month	
YES (If YES, complete EXPECTED SUBMISSION DATE)									X	
									Year	
ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)										
<p>On March 16, 2003, Comanche Peak Steam Electric Station (CPSES) Unit 1 was in Mode 1, Power Operation, operating at 100 percent power. At 2149 hours, both Main Feedwater pumps tripped on low suction pressure due to an unexpected trip of Condensate pump 1-01. Operators manually tripped the Unit 1 reactor, and all control rods fully inserted. All Auxiliary Feedwater pumps automatically started as expected.</p> <p>TXU Generation Company LP (TXU Energy) believes that the event was caused by a manufacturing defect in the Condensate pump 1-01 motor. Corrective actions include repair of the Condensate pump 1-01 motor and evaluation of the Predictive Analysis Program for large electric motors.</p> <p>All times in this report are approximate and Central Daylight Standard Time unless noted otherwise.</p>										

**LICENSEE EVENT REPORT (LER)**

Facility Name (1)	Docket	LER Number (6)			Page(3)
COMANCHE PEAK STEAM ELECTRIC STATION UNIT 1	05000445	Year	Sequential Number	Revision Number	2 OF 5
		03	002	00	

NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

**I. DESCRIPTION OF REPORTABLE EVENT****A. REPORTABLE EVENT CLASSIFICATION**

Any event or condition that resulted in manual or automatic actuation of the Reactor Protection System (RPS) including reactor trip or reactor scram.

**B. PLANT OPERATING CONDITIONS PRIOR TO THE EVENT**

On March 16, 2003, Comanche Peak Steam Electric Station (CPSES) Unit 1 was in Mode 1, Power Operation, operating at 100 percent power.

**C. STATUS OF STRUCTURES, SYSTEMS, OR COMPONENTS THAT WERE INOPERABLE AT THE START OF THE EVENT AND THAT CONTRIBUTED TO THE EVENT**

There were no inoperable structures, systems, or components that contributed to the event.

**D. NARRATIVE SUMMARY OF THE EVENT, INCLUDING DATES AND APPROXIMATE TIMES**

On March 16, 2003, CPSES Unit 1 was in Mode 1, Power Operation, operating at 100 percent power. At 2149 hours, Condensate pump 1-01 motor breaker [EIS: (SD)(P)(MO)(BRK)] unexpectedly tripped and Operators (utility, licensed) in the Unit 1 Control Room received a "Condensate Pump 1 Breaker Open" alarm [EIS: (SD)(P)(BKR)(ALM)]. Eleven seconds later, Main Feedwater pump 1-02 [EIS: (SJ)(P)] tripped on low suction pressure and one second later Main Feedwater Pump 1-01 [EIS: (SJ)(P)] also tripped on low suction pressure. The loss of both Main Feedwater pumps resulted in the automatic start as expected of both Motor Driven Auxiliary Feedwater pumps [EIS: (BA)(P)]. Operators (utility, licensed) in the Unit 1 Control Room initiated a manual reactor trip based upon the loss of the Main Feedwater pumps and the rapidly decreasing feedwater levels in all four Steam Generators. The Turbine Driven Auxiliary Feedwater pump [EIS: (BA)(P)] also automatically started as expected based on Lo-Lo level in 2 of 4 Steam Generators [EIS: (SB)(SG)]. All control rods fully inserted and the plant response to the manual trip was as expected.

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NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

On March 17, 2003, the Condensate pump 1-01 motor [EIS: (SD)(P)(MO)] was removed and shipped to a contracted motor repair facility for repair. Unit 1 returned to limited power operations (approximately 55% power) on March 17, 2003, utilizing the remaining Condensate pump 1-02 and operated at a reduced power level until March 31, 2003, when the repaired Condensate pump motor 1-01 was reinstalled and Unit 1 was returned to 100% power.

**E. THE METHOD OF DISCOVERY OF EACH COMPONENT OR SYSTEM FAILURE, OR PROCEDURAL OR PERSONNEL ERROR**

Operators (utility, licensed) in the Unit 1 Control Room received a "Condensate Pump 1 Breaker Open" alarm.

**II. COMPONENT OR SYSTEM FAILURES**

**A. CAUSE OF EACH COMPONENT OR SYSTEM FAILURE**

A phase to phase fault within the Condensate pump motor 1-01 windings occurred due to a manufacturing defect. The manufacturing defect was lack of a clearance or air gap between the two winding coils. Because the Condensate pump motors at CPSES are not classified as safety related, they were not purchased under the provisions of 10CFR21 and this defect is therefore not reportable per 10CFR21.

**B. FAILURE MODE, MECHANISM, AND EFFECTS OF EACH FAILED COMPONENT**

Lack of a clearance or air gap between the two winding coils caused rubbing and abrasion to occur between the coils over a period of years. The rubbing of the two coils caused localized insulation degradation over time and ultimately led to a phase to phase fault.

**C. SYSTEMS OR SECONDARY FUNCTIONS THAT WERE AFFECTED BY FAILURE OF COMPONENTS WITH MULTIPLE FUNCTIONS**

Not applicable – No failures of components with multiple functions were identified.

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NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

**D. FAILED COMPONENT INFORMATION**

Electric Machinery Manufacturing Co.  
4000 hp, Frame 6380, Three Phase, Electric Motor

**III. ANALYSIS OF THE EVENT****A. SAFETY SYSTEM RESPONSES THAT OCCURRED**

The Reactor Protection System and the Auxiliary Feedwater System actuated during the event. The loss of both Main Feedwater pumps resulted in the automatic start as expected of both Motor driven Auxiliary Feedwater pumps, and the Turbine Driven Auxiliary Feedwater pump also automatically started as expected based on Lo-Lo level in 2 of 4 Steam Generators. All control rods fully inserted and the plant response to the manual trip was as expected.

**B. DURATION OF SAFETY SYSTEM TRAIN INOPERABILITY**

Not applicable -- No safety system was rendered inoperable.

**C. SAFETY CONSEQUENCES AND IMPLICATIONS**

This event is specifically bounded by the Final Safety Analysis Report (FSAR) accident analysis of the loss of feedwater flow presented in Section 15.2.7 of the CPSES FSAR. The loss of normal feedwater transient is classified as an ANS Condition II event, a fault of moderate frequency. In the March 16, 2003 event, the Auxiliary Feedwater System responded as expected and maintained the necessary Steam Generator heat transfer capability. There were no other malfunctions or equipment failures which complicated the plant response or otherwise elevated risk beyond the event analysis data. There were no safety system functional failures associated with this event.

Based on the above, it is concluded that the event of March 16, 2003, did not adversely affect the safe operation of CPSES Unit 1 or the health and safety of the public.

**LICENSEE EVENT REPORT (LER)**

Facility Name (1)	Docket	LER Number (6)			Page(3)
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COMANCHE PEAK STEAM ELECTRIC STATION UNIT 1	05000445	03	002	00	5 OF 5

NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

**IV. CAUSE OF THE EVENT**

The Unit 1 manual reactor trip resulted from the unexpected trip of Condensate pump motor 1-01 and subsequent loss of both Main Feedwater pumps. The trip of Condensate pump motor 1-01 was caused by a phase to phase fault within the motor windings which occurred due to a manufacturing defect. The manufacturing defect was the lack of a clearance or air gap between the two winding coils.

**V. CORRECTIVE ACTIONS**

Condensate pump motor 1-01 was repaired, reinstalled, and returned to service. As a part of the CPSES Corrective Action Program, the condition of the winding coils on the other three Condensate pump motors will be evaluated. In addition, an evaluation of the Predictive Analysis Program, specifically for large electric motors, will be performed to determine the adequacy of the current program scope, monitoring practices, and overall effectiveness.

**VI. PREVIOUS SIMILAR EVENTS**

In 1995, CPSES Unit 1 experienced a manual reactor trip due to the loss of both Condensate pumps and both Main Feedwater pumps (see LER 445/95-003). However, the loss of both Condensate pumps in the 1995 event was due to a different cause than the March 16, 2003 event.